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NEW TECHNOLOGIES IMPROVE QUALITY OF SOVIET MACHINE TOOLS AND TOOLS

TECHNOLOGICAL LABORATORY AT MACHINE TOOL PLANT -- Leningradskaya Pravda,
 21 Jun 53

A technological laboratory headed by G. S. Bortkevich, Stalin Prize winner, has been in existence at the Leningrad Machine Tool Building Plant imeni Ya. M. Sverdlov for a little more than a month. This is where new high-production cutting methods are tested and new technological processes are checked experimentally.

Workers at the laboratory have successfully completed testing of a floating center-dog for machining rollers. An operator can now install and remove rollers while the lathe is in operation. The use of the dog has decreased time spent in preparatory operations to one fifth or one sixth the previous time.

Other research work being carried on at the laboratory has included the testing of an undercutting tool and the introduction of internal cooling in grinding operations, when the coolant penetrates through the pores of the grinding stone. Guards made of vinyl plastic for boring machines are being checked; and vibration dampers and lathe mandrels with pneumatic clamping are being tested.

The laboratory personnel carefully study advanced experiences of other enterprises and swiftly adopt those that can be used at their plant. The work has been set up in strict conformance with production requirements and as an aid to the plant's shops.

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DEEP ETCHING OF FERROUS METAL PLATES -- Tbilisi, Zarya Vostoka, 16 Jun 53

The chemical laboratory at the Tbilisi Machine Tool Building Plant imeni Kirov occupies three well-lighted rooms. In recent years, it has helped the plant solve complex production problems. For example, with its aid, the oxide coating of parts for all machine tools produced by the plant has been organized.

One of the greatest accomplishments made by workers of the laboratory recently has been the completion of a 2-year undertaking in mastering the production of plates for metal-cutting machine tools by a method of deep etching on inexpensive ferrous metal.

The inscriptions on the plates which are mounted on the machine tools explain the control system and operating properties of the machine tool and indicate the speeds and feeds at which it can operate. Formerly, the deep-etching method could be used successfully only on scarce nonferrous metal. For this reason, the inscriptions for metal-cutting machine tools had been made by another method on ferrous metal plates. However, in the process of operation, the inscriptions became scratched and worn, and as a result the operator in a short time was left without guiding instructions.

The number of plates needed yearly by machine tool building and other plants adds up to hundreds of thousands. Suffice it to say that 25 plates of different sizes and complexity are required for each series-produced screw-cutting lathe put out by the Plant imeni Kirov.

As a result of using the new technology, labor consumption in the manufacture of plates has been cut in half.

ROLLING OF GEARS, A NEW TECHNOLOGY -- Moscow, Tekhnika Molodezhi, Jul 53

An indispensable part of any mechanism is the gear, an item which requires great accuracy in its making. It is machined on complicated gear milling machines by highly skilled workers.

Associates of TsNIITMASH (Central Scientific Research Institute of Technology and Machine Building) have created an absolutely new, more productive method of making gears by rolling them from a round bar in a hot state. A special rolling mill has been built for this purpose. A hot bar is rolled vertically between two vertical geared rollers which turn in the same direction. The bar, besides turning, travels vertically. By pressing into the hot bar, the rollers imprint teeth in it. After this, it is only necessary to cut the bar into cross sections, drill holes in them, and the gears are ready.

In comparatively slow running machines where the gear turns at a speed of 2-3 meters per second, the gears can be used immediately after having been rolled without further machining. In rolling gear teeth, fractions of a minute are spent, whereas milling such a gear takes up to 30 minutes.

Gears for high-speed machines, where especially accurate meshing is required, are finish machined after having been rolled. But even in this case they are made several times as fast as those milled.

Besides being more productive, the new method also makes it possible to obtain a stronger tooth. When gears are milled, the metal between their teeth is cut out and in this manner the fiber is cross-cut. In rolling, the metal is not cut but is pressed out and the fiber of the metal follows the tooth profile. Consequently, the surface is harder than the body of the gear.

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In rolling gears, the metal is completely utilized, while in cutting teeth on a milling machine, a great deal of metal goes into chips.

By using different rollers, gears of any module or tooth shape can be rolled, such as spur gears, helical gears, etc.

The new highly productive method for manufacturing gears has already been instituted at one plant.

NEW SEMIAUTOMATIC LINE FOR HEAT TREATMENT OF TAPS -- Moscow, Izvestiya, 10 Jun 53

A semiautomatic line for hardening taps has been created at the Moscow Frezer Plant imeni M. I. Kalinin. The new line includes nine heat treatment units. The red-hot metal parts are transferred by conveyer from one bath to the next in strictly determined time intervals.

A uniform temperature is maintained in the baths at all times. The temperature is controlled by electric relays mounted on a central control panel which switch the electric heating devices on or off.

The line is attended by two operators and one set-up man.

A special composition is now used for cooling, as a result of which the item receives a bright finish. Sandblasting and chemical cleaning of the tools have been obviated.

The automatic heat treatment has shortened the production process six- to ninefold, and will reduce the cost of hardening parts approximately 20 per cent.

This is the third semiautomatic line to be set up at the plant. The first two are used for hardening drills and circular chasers.

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